

WE CLAIM:

1. A disk drive comprising:
 - (a) a disk;
 - (b) a head;
 - (c) an actuator arm for actuating the head radially over the disk;
 - (d) a voice coil motor (VCM) for rotating the actuator arm about a pivot, the VCM comprising a coil comprising a VCM resistance R;
 - (e) a back EMF voltage detector for measuring a back EMF voltage across the coil;
 - (f) a current detector for detecting a current I flowing through the coil;
 - (g) an IR voltage detector, responsive to the current I detected by the current detector, for detecting an IR voltage proportional to the current I times the VCM resistance R;
 - (h) a voltage compensator for substantially canceling the IR voltage from the measured back EMF voltage to generate a compensated back EMF voltage;
 - (i) a control voltage generator, responsive to the compensated back EMF voltage, for generating a control voltage applied to the coil to generate the current I flowing through the coil; and
 - (j) a stall detector for comparing the current I detected by the current detector to a threshold, wherein a VCM stall condition is detected if the current I exceeds the threshold for a predetermined interval.
2. The disk drive as recited in claim 1, wherein the current detector comprises a sense resistor in series with the coil.
3. The disk drive as recited in claim 1, wherein the stall detector comprises:
 - (a) a clock; and
 - (b) a counter for counting a number of clock cycles the current I exceeds the threshold.

- 1 4. A method of controlling velocity of an actuator arm in a disk drive, the disk drive
2 comprising a disk, a head, the actuator arm, and a voice coil motor (VCM) for rotating
3 the actuator arm about a pivot, the VCM comprising a coil comprising a VCM resistance
4 R, the method comprising the steps of:
5 (a) generating a control voltage from a command input and a compensated back EMF
6 voltage;
7 (b) applying the control voltage to the coil to generate a current I flowing through the coil
8 to move the actuator arm;
9 (c) detecting a back EMF voltage across the coil;
10 (d) detecting the current I flowing through the coil;
11 (e) detecting an IR voltage proportional to the current I times the VCM resistance R;
12 (f) subtracting the IR voltage from the detected back EMF voltage to generate the
13 compensated back EMF voltage;
14 (g) comparing the current I to a threshold; and
15 (h) detecting a VCM stall condition if the current I exceeds the threshold for a
16 predetermined interval.
- 1 5. The method of controlling velocity of an actuator arm as recited in claim 4, wherein the
2 step of detecting the current I comprises the step of detecting a current flowing through a
3 sense resistor in series with the coil.
- 1 6. The method of controlling velocity of an actuator arm as recited in claim 4, wherein the
2 step of detecting a VCM stall condition comprises the step of counting clock cycles while
3 the current I exceeds the threshold.